

C-O-N-F-I-D-E-N-T-I-A-L

CIA/RR GB 64-43

November 1964

CLIMATIC AND SOIL DATA ON PERM'

(58°01'N-56°16'E)

I. Climate

Perm' has a climate roughly comparable to that of northern Minnesota or North Dakota. It is characterized by long cold winters, short warm summers, and moderate precipitation and snow cover.

Surface air temperatures have wide annual and diurnal fluctuations. The average monthly temperatures (see Table 1) range from 4.3°F in the coldest month (January) to 64.4°F in the warmest month (July). Extreme temperatures of -49°F (January) and 96.8°F (August) have been recorded. The average daily temperature from mid-October to early April is below freezing, and from mid-May to mid-September it is 50°F or above. Sometimes, however, temperatures drop below freezing in summer and thawing occurs in winter.

The annual precipitation (see Table 2) averages 24 inches, about 60 percent occurring during late spring and summer (May through September). The maximum monthly precipitation normally occurs in July, with an average of 3.1 inches, and the minimum in April, with an average of 1.1 inches. Recorded annual precipitation in Perm' has ranged from 16.38 inches to 33.15 inches, and the greatest amount recorded within a 24-hour period was 2.83 inches, from a thundershower. The predominant forms of precipitation during the year are thundershowers in summer, drizzle in spring and fall, and snow in winter. Snowfall begins in October and sometimes occurs as late as May. A persistent cover of snow generally begins to form in early November. It usually reaches its maximum depth -- about 30 inches, as a long-term average -- in late March. The snow cover generally disappears in late April, leaving muddy conditions which persist for several weeks.

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GROUP 1 Excluded from automatic downgrading and declassification
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Table 1

Temperature  
(in degrees Fahrenheit)

	<u>Average</u>	<u>Absolute Maximum</u>	<u>Absolute Minimum</u>
January	4.3	35.6	-49.0
February	7.9	37.4	-41.8
March	19.0	55.4	-31.0
April	36.0	75.2	-5.8
May	50.0	89.6	14.0
June	60.1	93.2	28.4
July	64.4	95.0	28.4
August	59.5	96.8	30.2
September	48.6	82.4	17.6
October	34.9	68.0	-5.8
November	19.9	50.0	-32.8
December	8.2	37.4	-47.2
Annual	34.3	96.8	-49.0
Length of record (in years)	52	52	52

Average daily temperature exceeds:

32 -- 195 days  
41 -- 160 days  
50 -- 120 days  
59 -- 65 days

Average duration of frost-free period: 118 days

- 2 -

C-O-N-F-I-D-E-N-T-I-A-L

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Table 2

## Precipitation

	Average Precipitation (in inches)	Average Number of Days With Thunderstorms	Average Number of Days With Snowstorms
January	1.46	0	8
February	1.22	0	6
March	1.34	0	5
April	1.10	0.2	1
May	2.01	3	0.2
June	2.60	6	0
July	3.11	7	0
August	2.83	4	0
September	2.52	0.6	0
October	2.09	0.1	1
November	2.13	0	5
December	1.65	0	6
Annual	24.06	21	32
Length of record (in years)	44	<u>a/</u>	<u>a/</u>

Average number of days a year with snow cover: 176 b/  
 Average date of first snow cover: 4 November b/  
 Average date of disappearance of snow cover: 24 April b/  
 Average maximum depth of snow cover (based on 10-day  
 period of greatest depth): 30.4 inches b/  
 Period with depth of snow cover generally 4 inches or more:  
 12 November to 18 April b/

- a. Length of record unknown  
 b. Length of record: 44 years

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## II. Soils

The urban area of Perm' is situated on gently rolling terrain that rises 15 to 200 feet above the Kama River. The aircraft engine plant is located about 3 miles southeast of the river on a sandy terrace roughly 150 feet above the river.

The upper layer of sediments in the Perm' area generally consists of silty sand and sandy clay to a depth of 50 feet. This upper layer is successively underlain by alternating beds of soft sandstone and shale with an aggregate thickness of more than 500 feet, and below them by a calcareous sandstone stratum with an average thickness of 250 feet.

Foundation conditions for surface installations below the level of frost penetration (absolute maximum of more than 6 feet) vary from poor to good, depending on the degree of compaction of the characteristic silty sand and sandy clay deposits in the vicinity of the aircraft engine plant. Drainage problems of construction on the ground are seasonal, as the water table is near the surface in April and May but is considerably lower in summer and fall, dropping in places to as much as 150 feet below the surface. Deep excavations generally would not involve difficult problems of support and stabilization.

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C-O-N-F-I-D-E-N-T-I-A-L

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